Shell fusiform, thin, spire produced; whorls transversely striated. Aperture ovate, longer than wide; columella truncate, and with a single oblique fold anteriorly; outer lip thin, smooth internally, expanded at the hind part, and with the anterior margin creulated.

ALCIRA ELEGANS, H. Adams.

A. testa elongata, rufo-fusca; anfractibus 6, convexiusculis, transversim striatis (striis ad basin ultimi anfractus pluribus et profundioribus), maculis nigrioribus, at prope suturam pallidioribus; apertura et spira pari longitudine.

Shell elongate, reddish-brown; whorls six, slightly convex, transversely striated (the striæ stronger and more numerous on the basal portion of the last whorl), variegated with darker markings, and with some lighter spots next the suture; aperture equalling the spire in length.

Long. $7\frac{1}{2}$ lin.

Hab. Natal.

This genus appears to belong to the *Columbellina*, in some of which a similar fold exists upon the columella; but the absence of any thickening or dentition of the outer lip, and its being expanded, distinguish *Alcira* from all the groups at present included in that subfamily. The shell has been recently obtained from Natal by Hugh Cuming, Esq., of whose extensive collection it now forms a part.

7. ON THE REPTILES OF GUATEMALA. BY OSBERT SALVIN, M.A., F.Z.S.

(Reptilia, Pl. XXXII.)

There is perhaps no portion of the two continents of America where an accurate record of the localities in which collections have been made is of such importance as in that long isthmus of varying width which joins the mainlands in the northern and southern hemispheres. It is neutral territory, on which the faunæ and floræ of the north and south contend for superiority in the forms of animal and vegetable life which give character to the respective regions. That portion of this isthmus to which I now particularly refer is the Republic of Guatemala, which, with British Honduras and Yucatan, includes within the definite limits of the isthmus of Tehuantepec and the comparatively narrow neck of land lying between the bottom of the Bay of Honduras and the Pacific Ocean a very considerable portion of the whole. Though the forms of life inhabiting the district thus defined lean decidedly to Neotropical types, yet there are just sufficient genera and species of Nearctic forms to render the consideration of the localities of observed species a matter of great moment in accurately defining the boundary between the two great zoological

provinces of the New World. Though this boundary must be sought for further to the northward, we yet find in Guatemala a Sorex among mammals, the great mass of the *Mniotilitidæ* among birds, *Tropidonotus* and *Ischnognathus* among snakes, and *Rana* among frogs.

It must not be supposed that a definite boundary line, beyond which the species of *either* region do not pass, can ever be drawn between these two or any two zoological provinces. The real division will probably prove in this case to extend over a wide tract of country, and to occupy a position within certain limits, which include a district inhabited by forms to be considered as typical of each; the true boundary being that portion of such a district where the typical forms of each are found in equal numbers.

In making such a comparison, it is evident that forms that are common to the two regions, as well as such as inhabit exclusively the district in question, need not be taken into consideration. Thus viewing the list I give below, we find the southern genera considerably predominating over the northern. Taking the genera of snakes peculiar to the south, we have Homalocranion, Tomodon, Spilotes, Dromicus, Ahætulla, Leptodeira, and Dipsas; while the only genera peculiar to the north are Ischnognathus and Tropidonotus. Those common to the two continents are Herpetodryas, represented by the northern H. flavogularis, and by the southern H. rappii, H. boddaertii, and H. brunneus; and Elaps, represented by E. corallinus Of these, *Elaps* is hardly to be called a typical and E. fulvius. northern form, as it does not range far into the United States. The genera found in Guatemala, and not elsewhere in the Americas, are Streptophorus (S. sebæ) and Dipsadomorphus (D. biscutatus).

Of Batrachians, the North American genus Rana occurs, but no Tailed Batrachians: Bufo nebulifer is found at Dueñas, Bufo agua in Vera Paz, Engystoma carolinense at Coban, and Rana haleeina everywhere. Of Lizards, Basiliscus and Corythophanes occur at Lanquin, the former in abundance; they are also both found sparingly at Dueñas. Tropidolepis and Cnemidophorus occur both at Dueñas and Coban.

Again, referring to the division between the Nearctic and Neotropical regions, it appears certain that the northern forms extend far further to the southward along the table lands than along the hot districts of either seaboard; and again, the southern forms range further to the northward along the coasts than along the table lands. In Guatemala the "tierra caliente" seems, with very few exceptions, to embrace purely Neotropical types; whereas on the table lands and the more elevated and temperate districts only, all the North American genera and species that are to be found in the country occur.

Besides the Snakes enumerated below, there is a Rattlesnake (*Crotalus*) found in many parts, specimens of which I did not obtain. There is also a *Cenchris*, probably *C. piscivorus*, a fine example of which was one day brought to me by an Indian; but being too

large to be put into my bottle, I hung it up and left it till the following morning, intending to skin it. When I went to look for it at daylight, it was nowhere to be seen. The Indians said a dog had probably eaten it.

The principal places in the neighbourhood of which I collected during my stay in Guatemala last year and the early part of the present were Ducñas, Coban, and Lanquin. The former village is situated between the volcanos of Agua and Fuego, on an offshoot of the table lands. It is elevated about 4700 feet above the level of the sea. Coban, in Vera Paz, stands at an elevation of 4500 feet, on some broken and undulating ground, shut in on three sides by mountains. Its position is somewhat peculiar, being isolated in its temperate climate from the table lands by having on all sides a "tierra caliente," its only connexion with the back bone of the Cordillera being a tortuous and narrow ridge of mountains. Lanquin, though only about thirty-five miles to the eastward of Coban, is quite in the hot district. It lies in a hollow surrounded by high mountains. Here it was that most of the Tropical species were collected.

In collecting I received great assistance from Mr. Robert Owen of San Gerónimo, who secured for me many specimens at Coban while I was absent in the mountains, and also made several additions at San Gerónimo before forwarding my last collection to England.

The synonymy of each species I take from Dr. Gray's and Dr. A. Günther's Catalogues of the Reptiles in the Collection of the British Museum. I must add, that I have had the full benefit of Dr. Günther's great knowledge of this subject. Both in determining the species and in the remarks upon them, I have largely availed myself of his suggestions.

BASILISCUS AMERICANUS, Laur.

This Basilisk is very common at Lanquin, where I had no difficulty in obtaining plenty of specimens of both sexes and all ages, by offering the Indians a small reward for all they brought. They may frequently be seen on the low branches of a bush, and are particularly fond of basking on the boughs of a felled tree in a clearing near a stream. When running fast, they carry the tail slightly elevated. At Dueñas this species is more rare; I saw but three or four specimens, and only succeeded in securing one. In some specimens of the males, the tail is much more compressed than in others. In the series of young the crest is shown in all stages of development.

CORYTHOPHANES CRISTATA, Boie.

Agama cristata, Merrem.

Is not nearly so numerous as the Basilisk. I obtained but one specimen, which was brought to me at Lanquin.

ANOLIS SALLÆI, Günther, P. Z. S. 1859, p. 421. I obtained two specimens of this *Anolis* at Dueñas. ANOLIS FRASERI, Günther, P. Z. S. 1859, p. 407.

Coban; several specimens. All the examples of both these species of *Anolis* are immature.

TROPIDOLEPIS TORQUATUS, Gray.

Agama torquata, Wiegm. Herpet. Mex. p. 49. pl. 7.

By far the commonest Lizard in the country, and very generally distributed. The colouring appears to vary considerably in different individuals, as has been stated by Wiegmann. In some the blue of the under parts is barely traceable, nor is the black collar round the neck shown. In others these are very decidedly defined, while some have in addition a reddish-yellow crescent-shaped mark on the lower part of the chin. They are found usually about walls and hedgerows.

CNEMIDOPHORUS UNDULATUS, Wiegm. Herpet. Mex. p. 27.

This is also a common species, but not so abundant as *T. torquatus*. I found it at Ducñas, Coban, and Lanquin. This Lizard also exhibits a great diversity of colouring on the flanks. The shields of the head become very irregular in some of the older examples, and assume a tubercular appearance.

GERRHONOTUS WIEGMANNI, Gray, Cat. of Lizards, p. 54.

Not at all common. A single specimen obtained at Lauquin was the only one that came under my notice : this I caught on the convent wall. It was shown me by the priest, who said that he had noticed it on the same spot several nights in succession.

TYPHLOPS TENUIS.

Eyes imperceptible; tail exceedingly short, obtusely conical, scarcely bent downwards. Middle of the trunk surrounded by seventeen series of scales. Nasal shields reaching as far backwards as the rostral shield; two more shields behind the nasal. The length of the body 64 times the diameter of the girth. Each scale on the back brown, with lighter margin; belly dirty whitish.

Length 12 inches; length of the tail $1\frac{3}{4}$ line.

Hab. Coban in Gnatemala.

One specimen of this apparently new *Typhlops* was bronght to me at Coban by an Indian boy.

STREPTOPHORUS SEBÆ, Dum. et Bibr.

Very abundant at Coban, being found in the grass growing on each side of the streets.

One specimen is variegated, black and dirty white beneath.

HOMALOCRANION ATROCINCTUM, Dum. et Bibr.

Calamaria atrocincta, Schleg.

One specimen was killed at Dueñas among some logs of wood.

This example was very brilliantly painted, the white rings of the specimen in spirits were in life deep flesh-colour.

CORONELLA DECORATA, Günther, Cat. of Col. Snakes, p. 35.

One specimen was brought to me from the Volcan de Fuego. The under surface of this when fresh was ochreous yellow. It differs, moreover, from Dr. Günther's description in not having the yellow spots on the side of the head and the yellow band on the anterior part of the trunk.

TOMODON LINEATUS.

Tomodon lineatus, Dum. et Bibr. vii. p. 936. pl. 73.

A single specimen of this rare snake was taken at Ducñas by an Indian. There are probably but two other specimens known in collections.

The genus Tomodon appears to belong chiefly to Central America, T. lineatus, being found in Mexico and Guatemala, T. strigatus, Günther, on the island of Laguna, whilst T. dorsatus, the species nearest allied to Xenodon, extends southwards as far as Rio Janeiro. Dr. Günther has referred this species to the genus Psanmophis; but its natural affinities point rather to Dromicus lineatus. It seems to be an intermediate form between those genera.

TROPIDONOTUS ORDINATUS, Linn.

The specimens collected by myself at Dueñas either have the stripes not very conspicuous, with the intervals unspotted, and without occipital spots, or the stripes are very conspicuous, with intervals spotted with black on the anterior part of the trunk, and occiput without spots. They are to be referred to T. ordinatus, Linn., and T. sirtalis, Linn. A single specimen was brought to me at San Gerónimo. which does not quite agree with any of the numerous varieties of this Snake described by the North American Herpetologists as so many species. The scales are in nineteen rows ; and there is one anterior, and on one side three and the other four posterior oculars. The scales are brown, except those forming the vertebral series and those of the three outer series, which with the ventral plates are yellowish olive. There are two alternate series of square black spots, in the intervals between the dorsal and lateral stripes, more strongly defined on the anterior part of the body, whilst they are more irregular and intermixed with yellowish olive spots on the posterior parts. The black spots, as well as the olive ones, are on the skin rather than on the scales. A series of black dots accompany the lateral stripe. There is a well-defined black collar on the neck. The scales on the tail are very strongly keeled.

At Dueñas this species is exceedingly common about the rushy margin of a small lake. Numbers may be seen on a sunny day basking among the reeds on the edge of the water, into which they dart on being alarmed. ISCHNOGNATHUS DEKAYI, Dum. et Bibr.

Tropidonotus dekayi, Holbr.

Two specimens of this small Snake were brought to me at Coban by the Indians. The other species of this limited genus, *I. occipitomaculatus*, I never met with. It seems to have a more northern range.

SPILOTES CORAIS.

Coluber corais, Cuv.

Spilotes corais, Dum. et Bibr. p. 222.

Dueñas and Lanquin, not uncommon. The specimens which I collected belong to the Mexican variety described by Duméril as *Spilotes melanurus*.

HERPETODRYAS BODDAERTII.

Coluber boddaertii, Scetzen in Meyer's Archiv, ii. p. 59. Herpetodryas boddaertii, Schleg.

Two specimens from Dueñas were brought to me by the Indians. These examples have a dark streak down the centre of the back, and two paler lateral streaks, constituting a very marked variety. They do not, however, differ in other respects.

HERPETODRYAS BRUNNEUS, Günther, Cat. Col. Snakes, p. 116.

I picked up a specimen of this Snake on the road between Coban and Lanquin. It had been killed by some Indians passing. Another was sent to me by Mr. Owen from San Gerónimo. In life the upper parts are grass-green, not brown as in the description. This colour disappeared almost immediately after the specimen was put into spirits. I believe it is known as a fact, that the green snakes become blue in spirits. This appears an exceptional case; for the skin is blue, while the epidermis has become brown.

HERPETODRYAS RAPPH, Günther.

One specimen, a young one, was caught under the wall of a house in Dueñas.

HERPETODRYAS FLAVIGULARIS.

Psammophis flavigularis, Hallow. Proc. Ac. Nat. Sc. Philad. 1852, p. 178.

Herpetodryas flavigularis, Günther.

One specimen, a very large one, but a good deal injured, was sent to me by Mr. Owen from San Gerónimo. I took a rat from the stomach.

DROMICUS MARGARITIFERUS.

Herpetodryas margaritiferus, Schleg, Ess. ii. p. 184. Dromicus margaritiferus, Günther.

The scales of this species are in life decidedly bluish with a black

margin. It is common at Duchas, where several specimens were brought to me by the Indians. I also obtained two examples at Lanquin. It seems to be generally distributed. If at some future period more stress is laid on the character of coloration, this species will form the type of a separate genus, as the other species constituting the genus *Dromicus* exhibit a very decided tendency to longitudinal bands.

AHÆTULLA MEXICANA.

Leptophis mexicana, Dum. et Bibr. vii. p. 53. Ahætulla mexicana, Günther.

One specimen from Lanquin. This is a very beautiful species when fresh, the upper part being deep bluish-green.

LEPTODEIRA ANNULATA.

Coluber annulatus, Linn.

Leptodeira annulata, Fitzinger, Syst. Rept. p. 27.

One specimen (scales in twenty-three rows), killed in the thatch of a rancho near Dueñas.

DIPSAS CENCHOA, Linn. Coluber cenchoa, Linn. Dipsas cenchoa, Neuwied.

One specimen, a small one, from Coban, brought by an Indian boy.

DIPSADOMORPHUS BISCUTATUS.

Dipsas biscutata, Dum. et Bibr. p. 1153. Dipsadomorphus biscutatus, Günther.

I picked up a dead example (a very large one) of this snake on the road between Coban and Lanquin. It had probably been killed and thrown there by an Indian. There were previously only three specimens known, one having been brought lately by M. Sallé from Oaxaca, which is now in the collection of the British Museum. The present specimen measures at least $3\frac{1}{2}$ feet.

ELAPS CORALLINUS.

I obtained from the Indians two specimens of *Elaps* from Dueñas, one of which seems to agree most nearly with *E. fetzingeri*, Jan., the other with *E. nigrocinctus*, Girard. The former of these has twentyseven rings on the trunk and six on the tail. The number of ventral plates is 224, of the caudal 37. The black rings are placed at regular intervals. Each ring is narrowly edged with yellow, and the intervals between the rings filled in on the upper surface with dull red, which is darkest on the vertebræ, and gradually becomes lighter towards the flanks. The first ring on the neck commences anteriorly just within the occipital shields. Each black rings occupies a series of six scales. The spaces between the black rings occupy nine series of scales. The latter has twenty-two rings on the trunk and five on the tail. The number of ventral plates is 221, of the caudal 39. The black rings are equidistant. Each ring is narrowly edged with yellow, the ground colour is dark blood-red, browner on the upper surface, which grows darker towards the centre of the back. The first ring commences anteriorly within the posterior angles of the occipital shields. Each black ring includes a series of six scales, and each interval between the rings mostly includes fourteen scales.

ELAPS FULVIUS.

At Lanquin I obtained three specimens of a snake of this genus, which appears to be the E. aglæope, Cope. The ground colour of all these is red, darkest on the centre of the back, and the character of the markings is the same. They, however, differ in some respects; and I therefore describe each fully, though without the slightest doubt they belong to the same variety.

No. 1 has forty-one black rings on the trunk and ten on the tail. Between each ring on the trunk is a series of black spots, more or less run together or isolated, and arranged so as to form an irregular line on the upper surface parallel to the rings. On the tail these intermediate markings do not exist. The ring on the neck passes over the head across the posterior margin of the occipital shields in an irregular line, converging anteriorly. A band of black crosses the head, and passing over the posterior frontal and vertical shields converges posteriorly. The rostral and anterior frontal shields are dark reddish-brown. The rings are interrupted in several cases on the belly. The rings include a series of four scales, and the intervals between the bands a series of six. The number of ventral plates is 207, of caudal 51.

No. 2 is coloured exactly as the preceding; but the rings are less frequently interrupted, and the intermediate markings assume more decidedly the form of a ring. The black rings are forty-five in number on the trunk, and nine on the tail. The ring round the neck passes behind the occipital shield, but has a square marking extending partially over those shields; a marking passes over the frontal superciliary and vertical shields, but not quite to the lower margin of the labials. The black rings include a series of three scales, and the intermediate spaces six. The number of ventral plates is 224, of caudal 40.

No. 3. The rings of this specimen are very much interrupted, and the intermediate markings very irregular. The number of rings is forty-three on the trunk, and on the tail twelve. The ring round the neck is the same as in the other specimens, having its anterior edge passing over the occipital shields in an irregular line. The marking on the anterior part of the head extends to the lower labials. The rings include three scales, and the intervals between the rings five; these, however, vary much. The number of ventral plates is 212. of caudal 55.

It certainly appears somewhat remarkable that I should have found the northern form E. fulvius in the hot district of Lanquin, and the southern E. corallinus at Dueñas, in the temperate region of the Table lands. The reverse might certainly have been expected. But then the question arises, Are these two, E. fulvius and E. corallinus, really distinct species? The basis of the distinction seems to be laid entirely on the coloration, as no structural differences are traceable. It is true that the two, as I have given them above, represent great diversity in the number of the rings; but this inequality, being so noticeable in specimens that are certainly of the same species, seems to resolve itself into merely one of amount. The manner of arrangement is precisely the same in both, the series of rings being equidistant in both the species under consideration. If, then, we reject the number of rings as an insufficient ground for specific distinction, the other differences, such as the yellow bands and the intermediate black markings, can hardly be considered as such when no two specimens are exactly alike. The inequality existing in the number of the ventral plates and the proportion they bear to the caudal is such, that, if any one of the five specimens I have described be entitled to bear a specific appellation, so are they all.

Besides the great variation shown by my specimens, an examination of the series in the British Museum at once indicates that the great difference between extreme varieties can be filled in by an almost consecutive series of minor distinctions. Nor can these varieties be classed under the head of local varieties, and thus substantiate a title to specific distinction. In the present instance we find three, all of which bear separate names, inhabiting the same country. The deduction that *Elaps corallinus* and *E. fulvins*, and all the varieties which have been collected under each of these heads, belong in reality to one highly variable species, seems inevitable.

THAMNOCENCHRIS, n. g. (CROTALIDÆ.)

A pit on each side of the face. Posterior part of the body and tail much compressed, the latter ending in a horny spine. Subcaudals one-rowed. Tail prehensile. Head angular, anteriorly covered with irregular shields, and having small keeled scales posteriorly. No small scales between the superciliary and the orbit. The second upper labial forms the anterior part of the facial pit.

THAMNOCENCHRIS AURIFER, sp. n. (Pl. XXXII. fig. 1.)

Scales keeled in nineteen rows. Nine upper labial shields. Small shields between the fourth labial and the orbit. Green, with a dorsal series of orange spots edged with black. A black band from the orbit to the side of the occiput.

Hab. Coban, Vera Paz.

This new form is distinguished from *Teleuraspis* (Cope) by its peculiarly compressed body and tail, the latter being coiled as in some of the *Boidæ*, clearly indicating a habit of living in trees. It also differs from *Botriechis**, Peters, in having very large shields instead of very small scale-like ones on the upper surface of the snout. Nor does Prof. Peters mention in his description the pecu-

* Monatsb. Akad. Wiss. Berlin, 1859, p. 278.

liarly compressed tail, the most striking character of the present genus. The general form of the head is similar to that of Cenchris, which it moreover resembles in having the anterior portion of the upper surface of the head covered with irregular shields of moderate size. Nostril in the middle of a single plate. Upper labials nine, the third, fourth, and fifth of which are the largest. There are about seven small shields between the orbit and the fourth and fifth. From the superciliary backwards the head is covered with keeled scales. Scales of the body keeled in very oblique series. 154 ventral shields; anal entire; 53 caudal shields. Posterior ventral shields extend very far up the sides. Colour green, paler and yellower below. A series of about thirty-five small golden-yellow spots runs along the back to the tail, where they become more irregular; each spot has a black edge posteriorly. The upper surface of the head is uniform dull green, bordered on each side by a black stripe proceeding from the eye to the side of the occiput. Length of the head 1 inch 4 lines; of the trunk 2 feet 3 inches; of the tail 6 inches.

A single specimen only of this new species was preserved for me at Coban by Mr. Owen while I was away in the mountains of Lanquin. It had been brought to him by an Indian.

RANA HALECINA, Kalm.

Common throughout Guatemala. It was the only species of *Rana* I met with. At Dueñas the Indians catch them to eat, spearing the larger ones and netting the larvæ.

ENGYSTOMA CAROLINENSE, Holbr.

Exceedingly common at Coban. In the day time they hide under stones and pieces of wood. About half the specimens I obtained have a fold in the skin across the occiput; the rest arc without it. This character therefore cannot be considered of specific value.

BUFO AGUA, Latr.

Very abundant at Lanquin and also at Coban, but the specimens from the latter place seem to be smaller. Though numbers were brought to me, there was not a single large one among them. This species reaches its maximum development in the bottest parts of Brazil. It seems to diminish in size in more temperate regions.

BUFO NEBULIFER.

Bufo granulosus, Baird & Girard, Proc. Ac. Phil. 1852, p. 173. Bufo nebulifer, Girard, Proc. Ac. Phil. 1854, p. 87.

Very abundant at Dueñas, where they are to be found under stones and logs of wood. After dark they come out of their hiding places and may be seen hopping about in all directions. It is a species peculiar to Central America and Mexico.

HYLA HOLOCHLORA, sp. n. (Pl. XXXII. fig. 2.)

Vomerine teeth in two slightly oblique series, beginning from the

anterior edge of the nostrils and converging posteriorly, more or less interrupted in the middle. Width of the tympanum two-thirds of that of the eye. Skin smooth. Disks of the toes very broad, as large as the tympanum; the three outer fingers almost entirely webbed. Uniform grass-green above, yellow below.

Hab. Coban in Guatemala.

Habit that of *H. arborea*. Head broad, with flat crown, rather short muzzle, and rounded canthus rostralis. Eye of moderate size, rather prominent. Tympanum two-thirds the width of the eye, with a small fold behind it. The legs of moderate size, with very large discs, and with the tubercles on the lower part of the feet very well developed. Toes entirely, and the three outer fingers almost entirely, webbed. No fold across the chest. Skin without any appendages. Tongue with a conspicuous notch posteriorly. Male with a single subgular sac. Sacral vertebra considerably dilated. Upper parts uniform grass-green, except the upper arms and thighs, which are colourless. Lower parts yellow. Length of the body of an adult formale 3 inches; length of the fore leg 2 inches; length of the hind leg $4\frac{1}{2}$ inches.

Of this Tree Frog I obtained three examples at Coban, all of which were caught by the Indians. It was the only species I met with.

8. NOTE ON THE BALÆNICEPS REX. BY A. D. BARTLETT.

The question of the affinities of the *Balæniceps* having been discussed by so many able ornithologists, it may be interesting to know that this bird does not possess the remarkable patches of down found on each side of the breast in all the Herons and Bitterns.

Having had the opportunity of ascertaining this fact by an examination of the living bird, now in the Society's Gardens, I am enabled to say that these patches (which are of a singular dense and close structure, and are found beneath the feathers on each side of the front and fore part of the pectoral muscles) do not exist in the *Balæniceps*. The absence of this structure may, I think, assist in indicating the true affinities of this bird, as pointed out by Dr. Reinhardt in his communication to the Society on this subject *.

9. CHARACTERS OF TEN NEW SPECIES OF AMERICAN BIRDS. BY PHILIP LUTLEY SCLATER, SECRETARY TO THE SOCIETY.

1. CAMPYLORHYNCHUS NIGRICEPS.

Supra fulvo-rufescens nigro transfasciatus : pileo toto nigro : superciliis elongatis rufescenti-albidis, striga post-oculari nigra subtus limbatis : alis nigris, harum tectricibus fulvo extus lim-

* See antea, p. 377.